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ADMINISTRATIVE RECORD

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Date: October 15, 1979

Subject: Lead and Arsenic residues at development site at Routes 128 and 5

From: James D. Okun, Inspector

To: A. C. Lincoln Branch Chief

Concern expressed by Russ Wilder of the Regional EPA Enforcement Division about construction on wet lands, led to an examination of the development site located at the northwest corner of the intersection of routes 128 and 93. The jurisdiction over wet lands of this type is held by the Army Corps of Engineers, and they conducted the examination with the technical assistance of EPA's S and A Division. Included in the examinations by S and A were three soil and sludge samples from different locations on the site. These samples when analysed revealed the presence of dangerously high levels of many toxic materials. Sample AR07S 42238, taken from what was described by Richard Leighton of S & A as an abandoned lagoon, contained 1050 ppm arsenic and 400 ppm lead. Analysis of sample AR085S 42245 taken from sludge at the bottom of the so called southern lagoons revealed the presence of 8% chromium plus 400 ppm arsenic and 1200 ppm lead.

These results prompted an examination of all surface water, as well as a more detailed study of soil and sludge. This study confirmed the presence of extensive soil and surface water contamination by a number of toxic metal compounds. The two principle hazardous areas discovered thus far are the southern lagoons and the dry arsenic lagoon. The southern lagoons are suspected to be the liquid waste site for old tanneries which once occupied the area. The ultimate disposal of the southern lagoon's contents is now a matter of concern and controversy between the owner of the land (Mark Phillip Trust, William F. D'Annolfo apparent principle trustee) and EPA. Letters from the engineering firm of Dana F. Perkins and Sons, Inc. show the Trust was aware of the problem with chromium in the southern lagoons as early as August of 1972.

Evidence indicates that the arsenic lagoon was only recently discovered when samples taken from the site were analysed. Quoting from Richard Leightons Affidavit,

"Adjacent to the pond is an abandoned lagoon. This lagoon contains very high levels of arsenic (1100 ppm), zirconium, and lead. This lagoon is believed to contain lead arsenate, or lead arsenite, insecticides which were once produced on the site. Concern for the lagoon is three fold. The first is the health hazard it poses. The dust from the lagoon easily becomes airborne and presents an air pollution problem; in addition, acute or chronic exposure by ingestion or inhalation is highly hazardous. The fact that the material becomes airborne is borne out by the higher than normal concentrations of arsenic found in virtually all surface soil samples collected. Secondly, Mr. D'Annolfo stated

that he proposed to drain the outlet of the pond down to Halls Brook, instead of its present route. This proposed change would have the new channel pass through or near the site of this lagoon. This would cause an immediate water quality and potential health hazard to the Halls Brook storage area. The third point of concern regarding this lagoon is its size and ultimate disposal. The lagoon is 34,918 ft. and 5 ft. deep yielding approximately 6,500 cubic yards of hazardous material. The handling and ultimate disposal of this lagoon is very important so as not to cause a health or environmental problem."

It is suspected that the lead and arsenic in this lagoon are among the waste products of the Merrimac Chemical Co. This company is recorded as having been at one time (ca. 1915) the largest producer of arsenic insecticides in the U.S.

Using the data prepared by Leighton there are approximately ten tons of lead-arsenic compounds spread over ten thousand tons of soil support. Both lead and arsenic tend to have very slow migration rates in soils. This is born out by Leighton's data which shows substantially lower soil contamination levels even in areas adjacent to the lagoon despite a minimum of fifty years of storage time. This lagoon thus presents a hazard primarily as a pool of lead and arsenic which has the potential to disperse in the environment through the actions of air and water. It has been pointed out that the material in the lagoon is easily airborne. The higher than average lead and arsenic concentrations in all of the surface soil samples tested indicates the material is being carried through the air.

There also exists the potential for these compounds entering the Mystic Lakes if the developer were to go ahead with his current plan of rechanneling a stream through or next to the lagoon.

Lead and arsenic are both highly toxic to many plants and animals. Water concentrations as low as 0.1ppm could be expected to show deleterious effects.

According to Recommended Procedures for the Disposal of Pesticides promulgated under section 19 of FIFRA inorganic pesticides, and organics containing lead or arsenic should be disposed of in one of three ways. The first of these involves recycling the metal. This is probably impractical due to the low levels present from a recycling standpoint. The second is encapsulation and burial in a "specially designated landfill". This landfill is defined as one in which all surface and ground water is protected from contamination. The third recommendation is containerization and storage until a final disposal solution can be enacted. This would not be practical with 6,500 cubic yards of waste.

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